(19) World Intellectual Property Organization International Bureau



(43) International Publication Date 21 December 2000 (21.12.2000)

PCT

(10) International Publication Number

(51) International Patent Classification7:

WO 00/77880 A1

H01P 5/18

(21) International Application Number:

PCT/FI00/00524

(22) International Filing Date:

9 June 2000 (09.06.2000)

(25) Filing Language:

Finnish

(26) Publication Language:

English

(30) Priority Data: 991341

11 June 1999 (11.06.1999)

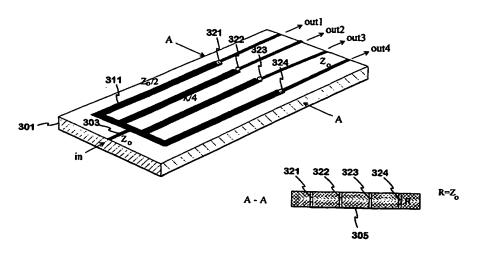
- (71) Applicant (for all designated States except US): NOKIA NETWORKS OY [FI/FI]; P.O. Box 300, FIN-00045 Nokia Group (FI).
- . (72) Inventors; and
 - (75) Inventors/Applicants (for US only): SALMELA, Olli [FI/FI]; Haahkakuja 1 D, FIN-00200 Helsinki (FI). KEMPPINEN, Esa [FI/FI]; Vermonrinne 17, FIN-00370 Helsinki (FI). KOIVISTO, Markku [FI/FI]; Niittykatu

3 C, FIN-02200 Espoo (FI). SOMERMA, Hans [FI/FI]; Mäkeläntie 1, FIN-02880 Veikkola (FI). IKÄLÄINEN, Pertti [FI/FI]; Pähkinälehto 27, FIN-03150 Huhmari (FI). SAVOLAINEN, Petri [FI/FI]; Kotitontuntie 14, FIN-02200 Espoo (FI).

- (74) Agent: BERGGREN OY AB; P.O. Box 16, FIN-00101 Helsinki (FI).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: MEANS FOR HANDLING HIGH-FREQUENCY ENERGY



(57) Abstract: The invention relates to structures, by which part of the incoming high-frequency energy can be separated to its own path (out1) or energies coming from different paths can be combined to a common path. The basic idea of the invention is that all components of the dividing or combining means are integrated into a monolithic structure in an insulating material, preferably multilayer ceramics. The transmission line strips (311) and other conductors are formed by printing conductive material on the outer surface of the ceramic piece (301) and in its interlayers, when required. The conductors between the surfaces are formed by filling the hole made through the layer or layers with conductive material. The resistive components (321) parallel with and between the surfaces are formed in a similar manner. The structure according to the invention is relatively small and reliable, and its manufacturing costs are low.